13

Topics in Fixed Income Analysis

This study session builds on the valuation concepts introduced in the previous study session. The first reading introduces valuation techniques for valuing bonds with embedded options. The second reading discusses credit risk and how it affects the valuation of fixed-income securities, credit analysis models, and how credit spreads are affected by liquidity. The final reading discusses credit default swaps.

READING ASSIGNMENTS

Reading 37	Valuation and Analysis: Bonds with Embedded Options by Leslie Abreo, MFE, Ioannis Georgiou, CFA, and Andrew Kalotay, PhD
Reading 38	Credit Analysis Models by Robert A. Jarrow, PhD, and Donald R. van Deventer, PhD
Reading 39	Credit Default Swaps by Brian Rose and Don M. Chance, PhD, CFA

LEARNING OUTCOMES

READING 37. VALUATION AND ANALYSIS: BONDS WITH EMBEDDED OPTIONS

The candidate should be able to:

a describe fixed-income securities with embedded options;

b explain the relationships between the values of a callable or putable bond, the underlying option-free (straight) bond, and the embedded option;

c describe how the arbitrage-free framework can be used to value a bond with embedded options;

d explain how interest rate volatility affects the value of a callable or putable bond;

e explain how changes in the level and shape of the yield curve affect the value of a callable or putable bond;

f calculate the value of a callable or putable bond from an interest rate tree;

g explain the calculation and use of option-adjusted spreads;

h explain how interest rate volatility affects option-adjusted spreads;

i calculate and interpret effective duration of a callable or putable bond;

j compare effective durations of callable, putable, and straight bonds;

k describe the use of one-sided durations and key rate durations to evaluate the interest rate sensitivity of bonds with embedded options;

l compare effective convexities of callable, putable, and straight bonds;

m describe defining features of a convertible bond;

n calculate and interpret the components of a convertible bond's value;

o describe how a convertible bond is valued in an arbitrage-free framework;

p compare the risk–return characteristics of a convertible bond with the risk–return characteristics of a straight bond and of the underlying common stock.

READING 38. CREDIT ANALYSIS MODELS

The candidate should be able to:

a explain probability of default, loss given default, expected loss, and present value of the expected loss and describe the relative importance of each across the credit spectrum;

b explain credit scoring and credit ratings, including why they are called ordinal rankings;

c explain strengths and weaknesses of credit ratings;

d explain structural models of corporate credit risk, including why equity can be viewed as a call option on the company's assets;

e explain reduced form models of corporate credit risk, including why debt can be valued as the sum of expected discounted cash flows after adjusting for risk;

f explain assumptions, strengths, and weaknesses of both structural and reduced form models of corporate credit risk;

g explain the determinants of the term structure of credit spreads;

h calculate and interpret the present value of the expected loss on a bond over a given time horizon;

i compare the credit analysis required for asset-backed securities to analysis of corporate debt.

READING 39. CREDIT DEFAULT SWAPS

The candidate should be able to:

a describe credit default swaps (CDS), single-name and index CDS, and the parameters that define a given CDS product;

b describe credit events and settlement protocols with respect to CDS;

c explain the principles underlying, and factors that influence, the market's pricing of CDS;

d describe the use of CDS to manage credit exposures and to express views regarding changes in shape and/or level of the credit curve;

e describe the use of CDS to take advantage of valuation disparities among separate markets, such as bonds, loans, equities, and equity-linked instruments.